Amended Claims

1. (Currently amended) A wavelength converter, comprising:

a monolithic ring laser having at least an input facet and an output facet, said laser, when activated, producing an output beam having a wavelength λ_2, said output beam being switched off upon receipt of an input beam of wavelength λ_1 at said inlet facet.

2. (Currently amended) A method of converting an optical signal of a first wavelength to a corresponding optical signal of a second wavelength, comprising [providing at least one monolithic ring laser having an input facet and an output facet;]:

providing at least one monolithic ring laser having an input facet and an output facet;

activating said at least one ring laser, to produce an output optical signal having said second wavelength at said output facet; and

modulating said output optical signal by supplying to said inlet facet an optical signal having said first wavelength.

[[2]] 3. (Currently amended) The method of claim 2, wherein activating said at least one ring laser includes injecting an optical signal having said second wavelength at said inlet facet.

[[3]] 4. (Currently amended) The method of claim 3, wherein modulating said output optical signal includes injecting into said at least one ring laser an optical signal having said first wavelength and having an intensity greater than the intensity of said signal at said second wavelength.

[[4]] 5. (Currently amended) The method of claim 4, wherein modulating said output signal includes switching off said output signal in the presence of said modulating signal, and switching on said output signal in the absence of said modulating signal to invert said modulating signal and to convert it to a different wavelength.

[[5]] 6. (Currently amended) The method of claim 4, further including providing first and second ring lasers in cascade, wherein modulating said output signal includes switching off said output signal in the absence of said modulating signal and switching on said output signal in the presence of said input modulating signal to convert said input signal to a different wavelength.

[[6]] 7. (Currently amended) The method of claim 4, wherein modulating said output optical signal includes injecting an optical data pulse stream into said at least one ring laser.

[[7]] 8. (Currently amended) The method of claim 2, wherein activating said at least one ring laser includes injecting a variable optical signal having a selectable wavelength.

[[8]] 9. (Currently amended) A wavelength converter, comprising:

a monolithic ring laser having at least an input facet and an output facet;

a first inlet modulating beam for injecting an optical signal having a first wavelength for propagation in said ring laser in a first direction; and

a second inlet beam for injecting an activating optical signal having a second wavelength for propagation in said ring laser in a second direction to normally produce an outlet optical signal having said second wavelength, wherein said first inlet

modulating beam has an intensity greater than said second <u>inlet</u> beam, whereby the presence and absence of said modulating beam modulates said outlet optical signal.

10. (New) The converter of claim 1, further including a first source for supplying a first optical input signal at wavelength λ_2 to an input facet to produce said output beam of wavelength λ_2 and a second source for supplying a second optical input signal at wavelength λ_1 to an input facet to modulate said output beam.

11. (New) The converter of claim 10, wherein the wavelength λ_1 of said second optical input signal corresponds to any longitudinal mode of said ring laser, and wherein said second optical input signal has an intensity greater than the intensity of said first optical signal, whereby the receipt of said second optical input signal switches off said output beam.

12. (New) The converter of claim 11, wherein said second optical input signal is a photonic data stream at wavelength λ_2 which produces a corresponding inverted output photonic data stream of wavelength λ_1.

13. (New) The converter of claim 10, wherein said first and second optical input signals impinge symmetrically on a single input facet to produce propagation in opposite directions within said ring laser.

14. (New) The converter of claim 1, wherein said laser, when activated, propagates light in a first direction in said ring to produce said output beam of wavelength λ_1, and wherein said input beam of wavelength λ_2 causes light to propagate in said ring in a second direction to switch off said output beam.

15. (New) The converter of claim 14, wherein said input beam at wavelength λ_2 is modulated to produce a corresponding inverted output beam of wavelength λ_1.

16. (New) The converter of claim 9, wherein the presence of said modulating beam reverses the direction of light propagating in said ring laser to modulate said outlet optical signal.

17. (New) The converter of claim 9, wherein said modulating beam is a first bit stream, and wherein said outlet optical signal is a corresponding bit stream inverted from said first bit stream.

18. (New) The converter of claim 9, wherein said modulating beam is a tunable laser having a variable wavelength selectable to correspond with any allowed longitudinal modes of said ring laser.

19. (New) The converter of claim 9, further including a second monolithic ring laser in cascade with said first-named ring laser output facet.

20 (New) The converter of claim 19, wherein said cascaded monolithic ring laser have different cavity lengths.

21. (New) The method of claim 2, wherein actuating said at least one ring laser comprises causing light to propagate in said laser in a first direction, and wherein modulating said output optical signal comprises supplying said first wavelength optical signal to said inlet facet at an intensity sufficient to reverse the direction of propagation of light in said laser to thereby switch off said second wavelength output optical signal.